

Ecological Literacy: Challenges of contextualization in the school curriculum in the city of Juazeiro-BA

Francineide Santana Silva, Josemário Martins da Silva

UNEB, Brazil

Received: 15 Nov 2022,

Receive in revised form: 13 Dec 2022,

Accepted: 20 Dec 2022,

Available online: 27 Dec 2022

©2022 The Author(s). Published by AI
Publication. This is an open access article under
the CC BY license

(<https://creativecommons.org/licenses/by/4.0/BR>)

Keywords— Ecology, Education, Culture,
Agroecology.

Abstract— Ecological Education must have as its essence the inclusion of participatory management of knowledge and knowledge of different peoples. In this sense, the present study points out reflections on the importance of this theme in the Political Pedagogical Projects of schools, placing this discussion in the municipality of Juazeiro/BA. As main challenges, the work indicates that it is necessary to think about new mentalities of the human being in the construction of a new contract of new protective and cooperative relations with nature.

I. INTRODUCTION

Nowadays, pollution and the destruction of nature have happened on a worldwide scale. Human beings have lived and are living through difficult times such as: floods, fires, droughts and extreme weather caused mainly by climate change and predatory capitalism.

The current global development model is limited and unsustainable. Countries need to produce goods and services to meet the needs of their populations, but they cannot continue along this path of development where rich countries have a consumption of ecological resources five times greater than the planet has the capacity to support. For many scholars who discuss the environment and climate change, in the current reality more than 30% of the planet's ability to regenerate has already been exceeded.

According to reports from the Working Groups of the Intergovernmental Panel on Climate Change-IPCC, human activities contribute to global climate change.

Climate change is the result of a process of accumulation of greenhouse gases in the atmosphere, which has been ongoing since the industrial revolution. Countries have different responsibilities due to their anthropogenic emissions. Within this new international scenario, it is

important to have a systemic approach to this phenomenon by educators and students and by all sectors of society, whether at the local or global level, as the environmental impacts arising from climate change will affect everyone, but mainly tend to affect the most vulnerable. poor and most vulnerable.

Faced with this reality, we ask ourselves how to develop a new ecological/green economy? How can we work to include ecological literacy in basic education school curricula in the city of Juazeiro-BA?

II. THEORETICAL FOUNDATION

Ecological education is a challenge of our times in the context of global climate change.

For Capra (2009),

[...] Eco-literacy, or “eco-literacy”, needs to become a sine qua non of politicians, business leaders and professionals in all areas, and it must be, at all levels, the most important part of education - from primary and secondary schools to colleges, universities and professional outreach centers.

The research was classified as quantitative and qualitative. The qualitative approach aimed to provide an overview of a given fact, being also classified as descriptive research (GIL, 2010), characterized as a case study, an empirical study that investigates a current phenomenon within its context of reality, when the boundaries between the phenomenon and context are not clearly defined and in which various sources of evidence are used (YIN, 2005, p. 32).

In this understanding pointed out by Capra, it is necessary that we think of an expressively collective society, in which education is the starting point for a new scenario that is designed in this ecological perspective with the broad participation of all segments in a multidisciplinary way.

Capra (2009) points out that at the Center for Eco-Literacy in Berkeley, California, he and his colleagues developed an education center for sustainable living, based on ecological literacy, aimed at primary and secondary schools:

This system involves a pedagogy whose very center is the understanding of what life is; a real-world learning experience (planting a vegetable garden, exploring a watershed, restoring a mangrove) that overcomes our separation from nature and re-creates in us a sense of where we belong; and a curriculum in which children learn the fundamental facts of life - that one species' waste is another's food; that matter continually circulates through the web of life; that the energy that moves the ecological cycles comes from the Sun; that diversity is the guarantee of survival; that life, from its beginnings more than three billion years ago, did not take over the planet through violence, but through organization in networks. (CAPRA, 2009, p.240).

The reflection that Capra brings us is very important for us to understand in pedagogy the understanding of what life and nature are. The web of life is based on the principle of interdependence, where all elements of an ecological community are interconnected and a network of relationships exists.

Ecological Education must have as its essence the inclusion of participatory management of knowledge and the knowledge of different peoples, such as: traditional family farmers in the background and closing pastures; peasants; quilombolas, riverside people; among others, attributing to education, research and the construction of

knowledge and pedagogical practices as a human, ecological, social and political place.

In this sense, working from the perspective that teaching, research and extension assume the role as tools to promote a democratic, participatory, fair, egalitarian, solidary and inclusive society, as well as the development of participatory scientific actions and practices that are essential for building ecological and agroecological knowledge for teaching units, educators and students.

To do science, it is necessary to adopt a supportive scientific practice, concerned with the destination of the knowledge it produces, Rigotto (et al., 2015, p. 208), highlight that:

It is also up to us to look into new forms of scientific production, based on solidarity and recognition of the other as an equal and equally producer of knowledge. Capable of subverting the hegemonic relations of symbolic forces while striving to (re)build the autonomy of dominated subjects.

According to Rigotto, scientific production based on solidarity must take into account hegemonic relations and the effort to rebuild the autonomy of dominated subjects.

In these contexts of research, development, learning and knowledge management, proposals for Environmental Education, Agroecological Education and Ecological Literacy can be connected, as the objectives of environmental, cultural, economic and social sustainability can be built or experienced, whether on a local, state, national or global scale, because, according to Paulo Freire (1998), "To educate is to provide a reading of the world, to know it in order to transform it and, by transforming it, to know it".

For Silva and Xavier (2020), Agroecology is a new science, several movements, a construction of individuals with new changes, a collective benefit, a set of more sustainable theories and practices.

Still according to Caporal (2009, p.7), agroecology is a science that requires a holistic approach and a systemic approach. If not, we are not talking about Agroecology.

Altieri (1987) emphasizes that Agroecology constitutes a theoretical and methodological focus that, making use of several scientific disciplines, intends to study agrarian activity from an ecological perspective.

According to Leff (2002) agroecology is land, instrument and soul of production, where new seeds of knowledge and knowledge are planted, where knowledge is rooted in being and in the earth; it is the cauldron where knowledge and knowledge, science, technologies and

practices, arts and crafts are amalgamated in the forging of a new productive and life paradigm.

Analyzing the aforementioned authors and their epistemological foundations, it is possible to perceive a connection with the Ecological Literacy proposed by Capra (2009, 2019) and collaborators of this proposal in the works *Conexões Ocultas – Ciência uma vida Sustentável* and in the book *Alfabetação Ecológica – A Educação das Crianças for a sustainable world*.

We can also start a reflection on the interface between Environmental Education and Ecological Literacy in the reasoning of Loureiro and Anello (2009), when they highlight that:

Due to its formative aspect, environmental education, as recommended in the National Environmental Policy and in the National Environmental Education Policy, must contemplate these theoretical aspects described above through two pillars (1) the political-construction of substantive democracy and participatory (organization, mobilization, participation in public spaces and intervention in the State); (2) and cultural-production and knowledge, values, attitudes and conduct. This is exactly why the Environmental Education Program (MMA, 2004) defines it as a strategic means for building sustainable and democratic societies. (LOUREIRO et al., 2009, p. 147).

We argue that as the National Education Policy and the National Environmental Education Program of the Ministry of the Environment - MMA, ensure and define Environmental Education (EA) as a means for building sustainable societies, its interface with Ecological Literacy (EA), are established when Capra (2009) points out that at the Eco-Literacy Center in Berkeley, California, he and his colleagues developed an Education Center for Sustainable Living.

This connection between Ecological Literacy, Agroecological Education and Environmental Education are fundamental for the Ecological Transition from a current world with deep environmental and civilization crises to a planet with sustainability and a common ecological future to be shared and shared.

The Ecological Transition, seen as a new element that comprises a debate on capitalist dynamics, the unlimited expansion of capital, the accumulation of profits, preservation of the environment and education, leads us to think about how to build new perspectives on public policies education, which we understand to be the path to such social and cultural transformation.

For Boff (2022) in his article: *The ecological transition to a biocentric society*, published in the magazine (EcoDebate, 06/24/2020) by the Humanitas Unisinos Institute – IHU, of the University of Vale do Rio dos Sinos Unisinos, in São Leopoldo, RS, highlighted that the Earth is our Mother and our common Home, that is, it is necessary to rethink the society we have no longer as a mere geography, but as a space for everyone, from citizens, landscapes, mountains, rivers, forests, defending a socio-ecological democracy, where the economy is not at the service of accumulation and the market, but of life.

The transition from a capitalist society of overproduction of material goods to a society that sustains all of life with human-spiritual values such as solidarity, compassion, interdependence, fair measure, respect and care and, not in the last place, love, will not happen overnight. It will be a difficult process that requires, in the words of Pope Francis in the encyclical “On Care for our Common Home”, a “radical ecological conversion”. That is to say, we must introduce relationships of care, protection and cooperation. A development made with nature and not against nature. (Boff, 2022).

Boff's expectation indicates the need for cultural changes in the social relations of production and modes of production, and new care for our common home, Mother Earth. It is necessary to think about new mentalities of the human being in the construction of a new contract of new protective and cooperative relations with nature.

For PRO ESG- (2022) The ecological transition is the transition from an unsustainable production and consumption system for the planet to a system capable of making the economy grow without destroying the environment, that is, taking into account social governance and sustainability in new projects and work on a change in consumption patterns from the local to the global level, respecting the cultures of different peoples and their traditions.

Costa (2018, p.12), argues that:

In the society we live in, in the middle of the 21st century, in a globalized world, the projects of civilization are very clear, on the one hand, the bourgeoisie as a class seeks to strengthen the capitalist production model, on the other, the working class seeks to enable the adoption of a new form of production, generation of work and income in which the principles of ecological, social, cultural and

economic sustainability are also contemplated.

Historically, the concept of sustainability and class struggle is based on the assumption of disputes between the productive ideologies of capital and the interests of the working class. While capitalists want to make their modes of production viable, conflicts and the incompatible ecological crisis between the unsustainable mode of production and consumption and the protection of nature are deepening.

In the analyzes pointed out so far dealing with ecological literacy in the perspective of the ecological transition and changes in the means of production based on sustainability, the education process is fundamental for the construction of conscious subjects capable of transforming reality, using critical thinking, the sustainable practices and actions.

III. DISCUSSION IN PERSPECTIVE

Currently, we have a traditional curriculum shaped in a European context that increasingly reflects the capitalist scenario that only serves the training of specialized labor, often losing sight of the reality and culture of a people. Evidently, small evolutions can be noticed in this context, when we consider the very autonomy that the municipalities have from the Municipal Education Plans - PME and the Pedagogical Political Projects - PPPs.

Thus, to think of an innovative proposal for ecological literacy in the context of the semi-arid region is, above all, to think of an initial literacy process that provides reading and writing, the construction of thinking aimed at educating our children for a sustainable world. THE

It is important to emphasize in this context the municipality of Juazeiro in the North of the State of Bahia, 510 km from the capital Salvador, located in the Meso region of the São Francisco Valley and in the State planning unit Território Sertão do São Francisco, one of its challenges is to reflect on the sustainability, agroecology and ecological literacy.

We understand that one of the important instruments for contextualized education for the semi-arid region, Environmental Education and for Ecological Literacy is the Municipal Education Plan-PME.

The PME in the municipality of Juazeiro is valid for ten years (2015/2025) and has 20 goals, based on different social indicators, with the aim of promoting improvements in all instances of municipal education. The approved Municipal Education Plan brings in one of its themes the Literacy Policy and in its goals it concerns literacy.

In 2010, a number of 67,901 inhabitants attended some type of school institution, that is, 34.9% of a population of

197,965 inhabitants. In this context, there were 88,368 inhabitants aged ten years or more without incomplete primary education, which means that the municipality entered the 21st century still boasting the negative rate of 44.63% of its population in a situation of illiteracy or without elementary education complete. (Source: Municipal Education Plan-PME of Juazeiro-BA, 2015-2025).

In the framework of public educational institutions, Juazeiro-BA had, in 2015, a network consisting of 167 Elementary Education Units for children, adolescents, young people and adults.

The Basic Education Network of the municipality of Juazeiro-BA in the Território do Sertão do São Francisco, referring to Basic Education in the municipal network in 2015, had a number of 125 institutions, including Schools and Nurseries, with an enrollment of 33,226 students covering all modalities education.

In relation to high school, the municipality had, in 2015, 21,039 students enrolled. Public Secondary Education is the responsibility of the State of Bahia, guided and defined by the guidelines of the State Department of Education-SEC together with the Regional Nucleus of Education-NRE-10 and its School Units. Public Secondary Education relies on the Official Plan and has local influences from the PPPs of its units, managers and teachers.

Until 2015, the offer of Higher Education had the following institutions and courses: University of the State of Bahia (UNEB), which offers undergraduate courses in Agronomy, Social Communication, Law and Pedagogy on Campus III.

The Federal University of Vale do São Francisco (UNIVASF), offering undergraduate courses in Visual Arts, Social Sciences, Civil Engineering, Mechanical Engineering, Computer Engineering and Production Engineering in Juazeiro-BA.

UNIVASF offers courses in Medicine, Nursing, Psychology, Physical Activity Sciences, Pharmaceutical Sciences and Administration, Veterinary Medicine, Zootechnics, Agricultural Engineering and Biological Sciences at the Campus of Agricultural Sciences at the Petrolina Campus (PE) and Archeology and Natural Sciences at the São Raimundo Nonato Campus (PI) and Natural Sciences at the Senhor do Bonfim Campus (BA). The implementation of the Federal University of Vale do São Francisco provided a greater diversity of courses, thus expanding access to Higher Education.

The University of Northern Paraná (UNOPAR), a private institution that offers courses in Administration, Marketing, Logistics, Higher Education and Tourism.

FASJ (São Francisco de Juazeiro College), a private institution offering courses in Publicity and Propaganda, Physiotherapy, Nursing and Administration.

We highlight that from 2015 to the present day, other Universities with courses, including those in the Distance Education modality, have been installed in the municipality of Juazeiro-BA.

In this set presented on the Municipal Education Plan - PME in the Municipality of Juazeiro, it can be seen in Goal 02, that some strategies propose actions aimed at contextualized education, environmental education, agroecology, traditional communities and the acquisition of contextualized didactic and paradidactic materials for education.

In the PME presented and in force, there is a strategy of articulating partnerships with governmental and non-governmental institutions as ways of enhancing Environmental Education actions. Even so, we highlight the need to deepen Environmental Education - EE and a greater interface with Ecological Literacy, establishing goals aimed at working on the education of children at the base, of young people and adults for life and a sustainable world.

It is important to highlight the existence of a Research Group on Interdisciplinary Environmental Education – GPEAI, formed by professors/researchers and students/researchers from different academic institutions in the Mesoregion of the São Francisco Valley, interested in developing knowledge and actions in Environmental Education.

The activities carried out by this group are interdisciplinary in nature and are directed at different local, national and global processes related to environmental issues, (Source: http://www.escolaverde.univasf.edu.br/?page_id=190), however its lines of research do not contemplate Ecological Literacy – AE, which makes us reflect on the need for a broader debate in the academic world. Do we want ecological literacy and children's education for a sustainable world? How to strengthen the discussion and production of content that can contemplate ecological literacy in the Curriculum Base and Municipal Education Plans?

For Gadotti (2007), it is necessary to educate for a sustainable life, both ecologically, environmentally and demographically (natural resources and ecosystems), which refers to the physical basis of the development process and the capacity of nature to support human action.

IV. FINAL CONSIDERATIONS

Throughout this work, we discuss the importance of dialoguing and re-signifying the learning of ecology from

the initial phase of the child at school, that is, from literacy and problematizations about respect for nature, through an ecological and humanitarian pedagogy, constituted of feelings, emotions, diversity, cycles with different dimensions of life and collective society. We need to speak the language of nature and curricula that teach our children the basic facts of life.

Faced with the complexity we are experiencing, one of the challenges is building knowledge based on the principles of ecology and sustainability for the sustainable community, which can think of an education system capable of planning a society that respects current and future generations to live well in a healthy environment and balanced for everyone.

REFERENCES

- [1] ABRAMOVAY, Ricardo; PIKETTI, Marie-Gabrielle. Credit policy of the national program for strengthening family farming (PRONAF): results and limits of the Brazilian experience in the 90s. *Cadernos de Ciência & Tecnologia*. vol. 22, nº 1, Brasília, 2005, pp. 53-66.
- [2] Ecological Literacy: Education for a Sustainable World/Michael K. Stone and Zanobia Barlow, eds: David W. Orr; preface by Frijof Capra; preface to the Brazilian edition Mirian Duailibi; translation by Carmen Fischer. -Sao Paulo: Cultrix, 2006. 2nd reprint 2019.
- [3] Proceedings of the VI Latin American Congress of Agroecology; X Brazilian Congress of Agroecology; V Seminar on Agroecology of the Federal District and Surroundings; September 12th to 15th, 2017, Brasília/DF. v. 13 no. 1 (2018): . Accessed on November 9, 2022.
- [4] TAB. I National Seminar on Education in Agroecology: Building principles and guidelines. ABA, 2013. Available at <http://sneagroecologia.blogspot.com.br/2013/07/carta-do-i-snea-e-mocao-anater.html>. Accessed on November 9, 2022.
- [5] Agroecology and Payments for Environmental Services (PES): Alternatives for ecological transition in the Environmental Protection Area-APA Joanes-Ipitanga. SILVA, Josemaria Martins da; and LIMA, Mateus Xavier de. Article from the Specialization Course in Environmental Management - UNICESUMAR; Maringá-PR: Salvador-BA, 2020.
- [6] GADOTTI, M. Educating for sustainability. *Social Inclusion*, Brasília, v. 3, no. 1, p. 75-78, Oct. 2007/Mar. 2008
- [7] LOUREIRO, Carlos. Environmental Education in the context of mitigating and compensatory measures of environmental impacts: the licensing perspective/Carlos Frederico Bernardo Loureiro, Org.); Secretary of the Environment; Environment Institute. Salvador: IMA 2019. 170p. (Environmental Education Series. v.5).
- [8] Environment and Development: in search of a commitment/Aldo Arantes(organizer.)- São Paulo: Anita Garibaldi: Maurício Grabois Foundation, 2010. 256p.
- [9] LAW NO. 2,541/2015 approving the Municipal Education Plan — PME of the Municipality of Juazeiro, in line with

Federal Law No. 13,005, of June 25, 2014, which deals with the National Education Plan — PNE, and other measures.

- [10] RIGOTTO, RM et al. Modern science: towards a solidary orientation of academic activity. In: CARNEIRO, FF (Org.). ABRASCO dossier. An alert about the impacts of pesticides on health. Rio de Janeiro: EPSJV; São Paulo: Popular Expression, 2015.
- [11] (EcoDebate, 24/06/2020) published by IHU On-line, editorial partner of the electronic magazine EcoDebate in the socialization of information. [IHU On-line is published by Instituto Humanitas Unisinos – IHU, from the University of Vale do Rio dos Sinos Unisinos, in São Leopoldo, RS.]
- [12] Ecological Transition: what it is and what advantages it brings to your company. Available at: <https://proesg.com.br/lgpd-e-as-3-principais-vantagens-de-correta-aplicacao-da-lei/>. Accessed on: 24.11.2022.
- [13] Sources for conceptualizing the ecological transition? : Article: <https://www.ecodebate.com.br/2020/06/24/a-transicao-ecologica-para-uma-sociedade-biocentrada-artigo-de-leonardo-boff/>
- [14] Ecological Transition [online] (2022). Available at: https://reform-support.ec.europa.eu/what-we-do/green-transition_pt. Accessed on 24.11.2022.
- [15] Ecological Transition and Environmental Policies: Contributions to Brazilian Municipalities São Paulo: 2020 ISBN 978-65-87504-04-9. Available at: <https://library.fes.de/pdf-files/bueros/brasilien/16410.pdf>. Accessed on 24.11.2022.